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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,400	07/01/2003	Chang Nam Kim	K-0533	9351

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EXAMINER

LUND, JEFFRIE ROBERT

ART UNIT PAPER NUMBER

1763

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/609,400

**Applicant(s)**

KIM, CHANG NAM

**Examiner**

Jeffrie R. Lund

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, and 5-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Magdo et al, US Patent 4,256,532.

Magdo et al teaches a mask having a first substrate 22 with a plurality of first via holes 14 and a thickness of 1-5 $\mu$ m; and a second substrate 11 with a plurality of via holes 13 and thickness of 125-375 $\mu$ m. The via holes are rectangular and overlap each other. The second via holes are larger than the first via holes. A bridge is formed on the first substrate between adjacent first via holes and across the second via hole. (Entire document, specifically, Figure 1)

3. Claims 1-3, 5, 6, 10-12, 14, 15, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Bohlen et al, US Patent 4,417,946.

Bohlen et al teaches a mask having a first substrate 5, 6, 16 with a plurality of first via holes 11 and a thickness of 1.9 $\mu$ m; a second substrate 3 with

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a plurality of via holes 14 and thickness of 1-4 $\mu$ m (about 5 $\mu$ m); a third substrate 12 with a plurality of via holes 15. The via holes are polygons and overlap each other. The third via holes are larger than the second via holes, and the second via holes are larger than the first via holes. (Entire document, specifically, Figure 1)

4. Claims 1-3, 5, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakamoto et al, US Patent 5,234,781.

Sakamoto et al teaches a mask having a first substrate 33 with a plurality of first via holes 34 and a thickness of 2-20 $\mu$ m; and a second substrate 31 with a plurality of via holes 35 and thickness of 500 $\mu$ m of via holes 165. The via holes are polygons and overlap each other. The second via holes are larger than the first via holes. (Entire document, specifically, Figure 5)

5. Claims 10, 14, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakamoto et al, US Patent 5,234,781.

Sakamoto et al teaches mask having a first substrate 33 with a plurality of first via holes 34; a second substrate 32 with a plurality of via holes; a third substrate 31 with a plurality of via holes 35. The via holes are polygons and overlap each other. The third via holes are larger than the second via holes, and the second via holes are larger than the first via holes. A bridge is formed on the first substrate between adjacent first via holes and across the second via hole. (Entire document, specifically, Figure 5)

6. Claims 1-6, 10-15, and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshizawa et al, US Patent 6,916,582 B2.

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Yoshizawa et al teaches a mask having a first substrate 42 with a plurality of first via holes 43 and a thickness of  $0.1\mu\text{m}$  (about  $1\mu\text{m}$ ); a second substrate 45 with a plurality of via holes 44 and thickness of  $10.1\mu\text{m}$ ; a third substrate 47 with a plurality of via holes 46. The via holes are polygons and overlap each other. The third via holes are larger than the second via holes, and the second via holes are larger than the first via holes. The via holes have a difference in width ( $W_2 - W_1$ ) of less than  $1000\mu\text{m}$ . (Entire document, specifically, Figure 4)

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4, and 10-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magdo et al, US Patent 4,256,532, in view of Yoshizawa et al, US Patent 6,916,582 B2.

Magdo et al was discussed above.

Magdo et al differs from the present invention in that Magdo does not teach a third substrate, the specific size of the vias, or the thickness of the third substrate.

Yoshizawa et al was discussed above and teaches a mask having three substrates with overlapping via holes.

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The motivation for adding a third substrate with overlapping via holes is to increase the mechanical strength of the mask, and to improve the uniformity of the layer deposited through the mask.

The motivation to optimize the size of the vias is to form the desired patterns of the desired size on the substrate. The motivation to optimize the thickness of the third substrate is to provide the required additional strength and provide the desired additional masking to optimize the mechanical strength of the mask and optimize the uniformity of the layer deposited through the mask.

Furthermore, it was held in *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), by the Federal Circuit that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. (Also see MPEP 2144.04 (d)) The vias and third substrate of Magdo et al and Yoshizawa et al, sized to that of the claimed invention, would be identical to the mask of the claimed invention.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the third substrate of Yoshizawa et al to the mask of Magdo et al, and optimize the size of the vias and the third substrate.

9. Claims 7-9, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshizawa et al, US Patent 6,890,385 B2, in view of Magdo et al, US Patent 4,256,532.

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Yoshizawa et al was discussed above.

Yoshizawa et al differs from the present invention in that Yoshizawa does not teach a bridge adjacent first via holes with a thickness of the second substrate and configured to cross the second via.

Magdo et al was discussed above and includes a bridge adjacent first via holes with a thickness of the second substrate and configured to cross the second via. (See figure 1)

The motivation for adding the bridge Magdo et al to the mask of Yoshizawa et al is to strengthen the mask and prevent the apertures from distorting, as taught by Magdo et al and is well known in the art.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the bridges of Magdo et al to the mask of Yoshizawa et al.

10. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshizawa et al, US Patent 6,890,385 B2.

Yoshizawa et al was discussed above.

Yoshizawa et al differs from the present invention in that Yoshizawa does not teach that the second substrate 45 is larger than the third substrate 47.

The motivation for making the second substrate larger than the third substrate is to optimize the size of the second and third substrates. Furthermore, it was held in *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), by the Federal Circuit that, where the only difference between the prior art and the



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claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. (Also see MPEP 2144.04 (d)) The second and third substrates of Yoshizawa et al, sized to that of the claimed invention, would have the same structure as the claimed invention and would not perform differently.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the size of the second and third substrates of Yoshizawa et al.

11. Claims 4, 13, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohlen et al, US Patent 6,890,385 B2.

Bohlen et al was discussed above.

Bohlen et al differs from the present invention in that Bohlen does not teach a specific width differences of the via holes.

The motivation to optimize the size of the via holes is to form the desired patterns of the desired size on the substrate. Furthermore, it was held in *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), by the Federal Circuit that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. (Also see MPEP 2144.04 (d)) The vias and bridges of Bohlen et al, sized to that of the



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claimed invention, would be identical to the via and bridges of the claimed invention.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the size of the via holes of Bohlen et al.

12. Claims 7-9, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohlen et al, US Patent 6,890,385 B2, in view of Magdo et al, US Patent 4,256,532.

Bohlen et al was discussed above.

Bohlen et al differs from the present invention in that Bohlen does not teach a bridge adjacent first via holes with a thickness of the second substrate and configured to cross the second via.

Magdo et al was discussed above and includes a bridge adjacent first via holes with a thickness of the second substrate and configured to cross the second via. (See figure 1)

The motivation for adding the bridge Magdo et al to the mask of Bohlen et al is to strengthen the mask and prevent the apertures from distorting, as taught by Magdo et al and is well known in the art.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the bridges of Magdo et al to the mask of Bohlen et al.

13. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohlen et al, US Patent 6,890,385 B2.

Bohlen et al was discussed above.

Bohlen et al differs from the present invention in that Bohlen does not teach that the second substrate 45 is larger than the third substrate 47.

The motivation for making the second substrate larger than the third substrate is to optimize the size of the second and third substrates. Furthermore, it was held in *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), by the Federal Circuit that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. (Also see MPEP 2144.04 (d)) The second and third substrates of Bohlen et al, sized to that of the claimed invention, would have the same structure as the claimed invention and would not perform differently.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the size of the second and third substrates of Bohlen et al.

### ***Response to Arguments***

14. Applicant's arguments, see pages 8 and 9, filed January 4, 2006, with respect to the rejection of claims 1-18 under 102 and 103 in view of Tsuchiya et al have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new grounds of rejection have been made as discussed above.

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***Conclusion***

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art teaches the technological background of the invention.

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

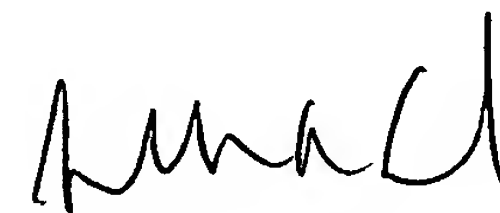
17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (6:30 am-6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435.

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The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jeffrie R. Lund  
Primary Examiner  
Art Unit 1763

JRL  
4/17/06